



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/924,761	08/09/2001	Jang-Gun Park	06192.0188.NPUS00	4340

7590 10/14/2005
McGuireWoods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102-4215

EXAMINER

RICHARDS, N DREW

ART UNIT PAPER NUMBER

2815

DATE MAILED: 10/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/924,761

Applicant(s)

PARK ET AL.

Examiner

N. Drew Richards

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-8,11,12,15-30 and 34-36 is/are pending in the application.
- 4a) Of the above claim(s) 15-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8,11,12,22-30 and 34-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-8, 11, 12, 22-30 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sumida et al. (WO 00/32981). EP 1 134 488 A1 is a published European Patent application that claims priority to WO 00/32981. This European application published in the English language and is therefore used as a translation for providing evidence as to what is disclosed in the text of WO 00/32981.

With regard to claim 1, Sumida et al. teach in figures 1-60(b) a display device. Specifically, Sumida et al. teach:

a display panel 105 for displaying an image (figure 1);

a light source 101 for generating a light beam for the display panel (figure 1, the light beam is not shown but will be emitted from source 101);

a first light guiding plate 102 adjoining the light source 101 and guiding the light beam generated from the light source 101 in a first direction (figure 1; see also figure 6 which shows the light source 101, first light guiding plate 102, and a sensor for measuring the light emitted from the first light guiding plate 102, thus the light beam has been guided in a first direction); and

a second light guiding plate 104 adjoining the first light guiding plate 102, formed on the display panel 105 and guiding the light beam from the first light guiding plate 102 in a second direction substantially perpendicular to the first direction (figure 1; see also figure 2(b) which shows the light beam entering the display panel 105 from the second light guiding plate 104, note that the second light guiding plate 104 directs the light beam downward (vertical) while the first light guiding plate 102 directed the light beam sideways (horizontal) in a direction perpendicular to that of the second light guiding plate 104);

wherein the second light guiding plate 104 has a first pattern (grooves as seen in figure 1) partially reflecting the light beam guided from the first light guiding plate 102 toward the display panel and partially transmitting the light beam reflected by the display panel 105 (figures 4(a) and 4(b) better show the reflecting portion 104e and the transmitting portion 104d), the first pattern having a plurality of prism-shaped patterns 104f arranged in parallel along a predetermined direction (figure 4(a)), each of the prism-shaped patterns 104f comprising a transparent surface 104d transmitting the light beams reflected from the display panel, and a reflective surface 104e reflecting the light beams from the light source toward the display panel, the transparent surface arranged closer to the light source and the reflective surface arranged further from the light source.

Sumida et al. do not explicitly teach a first acute angle between the transparent surface and a flat surface of the second light guiding plate is in a range of between 3.0 degrees to 3.5 degrees, and a second acute angle between the reflective surface and

the flat surface is in a range between 33 degrees to 34 degrees. Though not explicitly disclosed, it is nonetheless considered obvious to one of ordinary skill in the art at the time of the invention to form the angles to the degrees claimed. Sumida et al. teach forming these grooves to reflect the light beam as uniformly as possible so as to reduce moire fringe effects and to allow for consistent brightness across the entire display, as well as to transmit as much as possible of the light being reflected by the display. This produces a bright, clear picture. Choosing the specific angles claimed is considered an obvious optimization to obtain the desired result of a bright, clear picture on the display.

These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

With regard to claim 3, the light source 101 is disclosed as being a light emission diode (LED).

With regard to claim 4, the first light guiding plate 102 has a second pattern 102f for uniformly inducing the light beam from the light source 101 toward the second light guiding plate 104 (figures 5(a) and 5(b) show the pattern 102f on first light guiding plate 102).

With regard to claim 5, the first light guiding plate 102 has a first side 102b adjoining the second light guiding plate 104 and a second side 102c opposite the first side, the second pattern 102f is formed on the second side 102c of the first light guiding plate 102 (figure 5(a) illustrates the first, second and third surfaces and figure 9 best shows the relation between the first and second light guiding plates 102 and 104 as claimed).

With regard to claim 6, the second pattern 102f comprises a plurality of groove patterns (seen in figures 5(a) and 5(b) for example).

With regard to claim 7, the groove patterns have a triangular shape.

With regard to claim 8, Sumida et al. disclose the groove patterns having a vertex, but do not disclose an acute angle of the vertex being approximately 90 degrees. Though not explicitly disclosed, it is nonetheless considered obvious to one of ordinary skill in the art at the time of the invention to form the angles to the degrees claimed. Sumida et al. teach forming these grooves to reflect the light beam as uniformly as possible so as to reduce moire fringe effects and to allow for consistent brightness across the entire display, as well as to transmit as much as possible of the light being reflected by the display. This produces a bright, clear picture. Choosing the

specific angles claimed in considered an obvious optimization to obtain the desired result of a bright, clear picture on the display.

These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688(Fed. Cir. 1996)(claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

With regard to claim 11, the second light guiding plate 104 has a first surface 104b facing the display panel 105 and a second surface opposite to the first surface 104c opposite to the first surface, the first pattern is formed on the second surface 104c (as seen in figure 4(a), the display panel would be below plate 104 as shown in figure 1).

With regard to claim 12, the first pattern has a pattern inclined by an angle of 20 to 30 degrees with respect to an axis formed along an interface between the first light guiding plate and the second light guiding plate. This is disclosed in table 1 of the specification which discloses many varying angles in the range of 20 to 30 degrees to prevent moire fringe effects.

With regard to claim 22, Sumida et al. teach:

a display panel 105 for displaying an image (figure 1);

a light source 101 for generating a light beam for the display panel (figure 1, the light beam is not shown but will be emitted from source 101);

a first light guiding plate 102 adjoining the light source 101 to induce the light beam from the light source 101 in a first direction and having a first pattern 102f formed on a surface thereof for uniformly inducing the light beam (figure 1; see also figure 6 which shows the light source 101, first light guiding plate 102, and a sensor for measuring the light emitted from the first light guiding plate 102, thus the light beam has been guided in a first direction); and

a second light guiding plate 104 adjoining the first light guiding plate 102 to induce the light beam from the first light guiding plate 102 in a second direction and having a second pattern 104f for reflecting the light beam toward the display panel 105, the first direction is substantially perpendicular to the second direction (figure 1; see also figure 2(b) which shows the light beam entering the display panel 105 from the second light guiding plate 104, note that the second light guiding plate 104 directs the light beam downward while the first light guiding plate 102 directed the light beam sideways in a direction perpendicular to that of the second light guiding plate 104,

wherein the second pattern has a plurality of prism-shaped patterns 104f arranged in parallel along a predetermined direction (figure 4(a)), each of the prism-shaped patterns 104f comprising a transparent surface 104d arranged closer to the light source and transmitting the light beams reflected from the display panel, and a reflective

surface 104e arranged further from the light source and reflecting the light beams from the light source toward the display panel.

Sumida et al. do not explicitly teach a first acute angle between the transparent surface and a flat surface of the second light guiding plate is in a range of between 3.0 degrees to 3.5 degrees, and a second acute angle between the reflective surface and the flat surface is in a range between 33 degrees to 34 degrees. Though not explicitly disclosed, it is nonetheless considered obvious to one of ordinary skill in the art at the time of the invention to form the angles to the degrees claimed. Sumida et al. teach forming these grooves to reflect the light beam as uniformly as possible so as to reduce moire fringe effects and to allow for consistent brightness across the entire display, as well as to transmit as much as possible of the light being reflected by the display. This produces a bright, clear picture. Choosing the specific angles claimed is considered an obvious optimization to obtain the desired result of a bright, clear picture on the display.

These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233

(CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

With regard to claim 23, the first light guiding plate 102 has a first surface 102a adjoining the light source 101, a second surface 102b adjoining the second light guiding plate 104, and a third surface 102c opposite to the second surface, the first pattern 102f being formed on the third surface 102c (figure 5(a) illustrates the first, second and third surfaces and figure 9 best shows the relation between the first and second light guiding plates 102 and 104 as claimed).

With regard to claim 24, the first pattern 102f comprises a plurality of grooves (seen in figures 5(a) and 5(b) for example).

With regard to claim 25, the second light guiding plate has a first surface 104b adjoining the second surface of the first light guiding plate 102b, a second surface 104a adjoining the display device 105 and a third surface 104c opposite to the first surface, the second pattern 104f formed on the third surface 104c (see figures 1 and 4(a) for example).

With regard to claim 26, the second pattern comprises a plurality of prism-shaped patterns inclined by an angle of 20 to 30 degrees with respect to the second surfaced of the second light guiding plate. This is disclosed in table 1 of the specification which discloses many varying angles in the range of 20 to 30 degrees to prevent moire fringe effects.

With regard to claim 27, each prism-shaped pattern comprises a reflective surface 104e for reflecting the light beam from the first light guiding plate toward the

display panel and a transmissive surface 104d for transmitting the light beam reflected by the display panel, and the transmissive surface is closer to the first light guiding plate than the reflective surface.

With regard to claim 28, the first light guiding plate 102 further includes a third side 102a adjoining the first and second side 102b, 102c, and the light source 101 is disposed at the third side 102a.

With regard to claim 29, Sumida et al. teach:

a display panel 105 including a plurality of pixel patterns arranged in a matrix shape (figure 1; see figures 3(a) and 3(b) for the plurality of pixels patterns in a matrix);

a light source 101 generating a light beam for the display panel (figure 1, light beam not shown); and

a light guiding plate 104 guiding the light beam generated from the light source 101 toward the display panel 105, the light guiding plate having patterns 104f being slant with respect to the pixel patterns (figure 1), each pattern 104f of the light guiding plate 104 has a transparent face 104d and a reflective face 104e and a cross section of the patterns forms a saw-tooth shape,

Sumida et al. do not explicitly teach a first acute angle between the transparent surface and a flat surface of the second light guiding plate is in a range of between 3.0 degrees to 3.5 degrees, and a second acute angle between the reflective surface and the flat surface is in a range between 33 degrees to 34 degrees. Though not explicitly disclosed, it is nonetheless considered obvious to one of ordinary skill in the art at the

time of the invention to form the angles to the degrees claimed. Sumida et al. teach forming these grooves to reflect the light beam as uniformly as possible so as to reduce moire fringe effects and to allow for consistent brightness across the entire display, as well as to transmit as much as possible of the light being reflected by the display. This produces a bright, clear picture. Choosing the specific angles claimed is considered an obvious optimization to obtain the desired result of a bright, clear picture on the display.

These claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688 (Fed. Cir. 1996) (claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

With regard to claim 30, the patterns 104f of the light guiding plate 104 forms an angle of about 20 degrees to about 30 degrees with respect to an axis formed along an a light incident face of the light guide plate to which the light beam generated from the light source is incident. This is disclosed in table 1 of the specification which teaches many varying angles in the range of 20 to 30 degrees to prevent moire fringe effects.

With regard to claim 34, Sumida et al. further teach a sub light guiding plate 102 having a first side 102b adjoining the light guiding plate and a second side 102c opposite to the first side 102b, a third side 102a adjoining the first side and second side, wherein the light source 101 is disposed at the third side (see figure 5(a) in conjunction with figure 1).

With regard to claim 35, the sub light guiding plate 102 comprises groove patterns 102f formed at the second side 102c to adjust a light beam path toward the light guiding plate 104.

With regard to claim 36, the groove patterns have a triangular sectional shape.

Response to Arguments

3. Applicant's arguments filed 8/3/05 have been fully considered but they are not persuasive.

Applicant has argued that the claimed ranges are not a mere selection of optimum ranges within a prior art range. Applicant points to paragraphs [0405] and [0501] to show that Sumida teaches angles of 45 degrees and 3.8 or 1.5 degrees, which are both outside the claimed ranges. This is not persuasive. The rejections do not rely upon the obviousness of choosing an optimum range from within a prior art range. Rather, the rejections rely upon the obviousness of discovering an optimum value of a known result effective variable.

Applicant also argues that the claimed ranges achieve unexpected results relative to the ranges of Sumida. However, the applicant does not state what the

unexpected results are. Applicant merely relies upon two statements in their specification that purport that angles outside the claimed range result in some light beams not being transmitted or not being directed towards the LCD panel part. These statements are not persuasive as a showing of unexpected result. One of ordinary skill in the art would expect the angles of the grooves (or the angles of the prisms) to effect the light transmitted from the light source to the LCD panel, which is the primary reason the grooves are created to begin with. The choice of the claimed ranges is considered routine optimization of a known result effective variable to reflect the light beams as uniformly as possible to achieve a uniform, bright display. Applicant has not convincingly shown unexpected results from their claimed range and thus this rejection is still considered proper.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

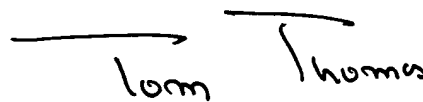
Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Drew Richards whose telephone number is (571) 272-1736. The examiner can normally be reached on Monday-Friday 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



NDR



TOM THOMAS
SUPERVISORY PATENT EXAMINER